4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

MARK J. ANTOINE ET AL.

Serial No. **10/076,080**

Filing Date: **February 14, 2002**

For: **BROADCAST TELEVISION AND SATELLITE SIGNAL SWITCHING SYSTEM AND METHOD FOR TELEPHONY SIGNAL INSERTION**

Art Unit: **2611**

Attorney Docket No. **25730**

Asst. Commissioner for Patents
Washington, D.C. 20231

Sir:

PRELIMINARY AMENDMENT

Prior to examination, please amend this application as follows:

In the Specification:

Please replace the paragraph beginning on page eight (8), line nine (9) of the specification with the following rewritten paragraph:

FIGS. 2A, 2B, 2C, and 2D combine to provide is a block diagram illustrating an alternate embodiment of the multiswitch and triplexer of the present invention;

FIGS. 3A, 3B, and 3C combine to provide a block diagram of an alternate embodiment of the system of FIGS. 2A, 2B, 2C, and 2D in keeping with the teachings of the present invention;

FIGS. 4A and 4B are schematic block diagrams illustrating alternate embodiment of a triplexer of the present invention;

FIGS. 5 is a partial block diagram illustrating operating elements of the embodiments of FIGS. 2A-3C;

FIG. 6 is a partial functional flow diagram illustrating a baseband communications system including a microcontroller operable with the multiswitch and triplexer of FIGS. 2A-3C;

FIGS. 7A and 7B combine to provide a schematic block diagram illustrating one implementation of the system of FIG. 6; and

FIG. 8 is a functional flow diagram illustrating an alternate embodiment of a controller of FIG. 6.

Please replace the paragraph beginning on page ten (10), line one (1) of the specification with the following rewritten paragraph:

With reference now to FIGS. 2A,2B,2C, and 2D as combined and referred to herein after as FIG. 2, one preferred embodiment of the system **10** includes input ports **42** providing six satellite port connections **46** and a cable T.V. port feed connection **48** which as herein provided by way of example are routed through output ports **44** to as many as eight receivers **20**. Cascaded antenna outputs **50** are provided after initial antenna signal processing within the multiswitch **26** for providing a feed to other multiswitch antenna ports thus allowing a cascading of the antenna ports to feed multiple receivers. As earlier described with reference to FIGS. 1 and 2, the multiswitch **26** interfaces to the triplexer **28**.

Alternate triplexer embodiments will include a "high end" triplexer **28h** or a "low end" triplexer **28l** as illustrated with reference to the system of FIGS. 3A, 3B, and 3C combined and herein after referred to as FIG. 3 and to the triplexer diagrams of FIGS. 4A and 4B. The “high end” triplexer **28h**, so named for its added features over a “low end” triplexer **29l**, has a SLIC interface device **52** and a DAA interface device **54**. The SLIC **52** is a subscriber line interface that allows connection to the receiver **20** and the DAA interface **54** allows connection to an outside wall line connection **54**. The function of DAA device **36** is to detect a ring or connection signal to the outside ring connection and the SLIC device **52** is used to regenerate the ring and connect to the receiver **20** for providing connectivity through the multiswitch **26**.

Please replace the paragraph beginning on page ten (10), line eighteen (18) of the specification with the following rewritten paragraph:

The block diagram of FIG. 3 illustrates, by way of example, a low end system **10l** having the multiswitch using either a low **28l** or high **28h** end triplexer **28**. Low end and high end as herein described refer to the cost of the equipment and allow for optional uses as desired by the installer or customer. By way of example, for the low end system **10l** of FIG. 3, four satellite inputs ports **42** are provided as well as an antenna cable connection **48**. The cascading outputs **50** may or may not be included depending on the intended use of the system **10l**. The system **10** optionally includes cable TV upstream components **56** to allow a cable modem **58** in place of a receiver **58** and triplexer **28** to provide cable

modem access from the cable connection **48** through the multiswitch **26**. By way of further example and with reference again to FIG. 3, the low end embodiment of the system **10l** as herein described has only a downstream connection **60** for providing cable TV or off air antenna programming coupled with the satellite input feeds.

Please replace the paragraph beginning on page eleven (11), line one (1) of the specification with the following rewritten paragraph:

With continued reference to FIGS. 2 and 3, the block diagram signal input flow starts at the top portion where either a vertical **42v** or a horizontal **42h** polarization is provided by the satellite signal antenna **14**. The system provides 13 volt and 18 volt biasing **62**, respectively. The 13 volt signal is referred to as vertical or as having right hand polarization, and the 18 volt signal as horizontal or as having a left hand polarization. These biases are fixed onto each of the respective ports. Signal gain and filtering **64** provide a desired 950 to 1450 MHz signal passage from the satellite antenna ports **46**. Distributed couplers **66** provide uniform feeds to each of the single pole multi-throw switches **68** which will connect to each antenna port and satellite antenna port and allow a master microcontroller **70** to select the needed programming feed for routing to a particular receiver **20**. The switches **68** are controlled by the master microcontroller **70** described in further detail later in this section. In the embodiment herein described, the microcontroller **70** is carried within the multiswitch housing, as illustrated with reference to FIG. [4] <u>5</u>, but it is to be understood that the microcontroller may be external without

departing from the teachings of the present invention. Returning to FIGS. 2 and 3, after the switch **68**, fixed gain and RF slope equalization components **72** compensate for higher frequency attenuation due to cable losses. After the slope equalizer, a coupler **74** is provided for coupling the cable T.V. line **76** with the satellite feed **78** so that a single feed, the single coax **18** to each triplexer, can be used for connecting to the appropriate receiver **20**. Variable gain **80** is provided at the output for adjusting the signal level for the satellite as well as terrestrial signals. The telephony signal is diplexed **82** with the RF signal for transmission over the common and single coax **18** to the triplexer **28**. Once the signal leaves the multiswitch **26**, it is carried by the coax to the triplexer **28**.

Please replace the paragraph beginning on page eleven (11), line twentyfive (25) of the specification with the following rewritten paragraph:

As illustrated with reference again to FIGS. 2 and 3, the triplexer **28** functions to split the satellite portion of the frequency band and the cable portion of the frequency band as well as the telephony portion of the band that is being transported across the coaxial cable **18**. As illustrated with reference again to FIGS. 4A and 4B, within the telephony portion of the triplexer **28** is a microcontroller **84** that provides a control signal used between the triplexer and the master microcontroller **70** of the multiswitch **26** to control the RF and telephony switching between a triplexer and a multiswitch and a triplexer multiswitch triplexer path.

Please replace the paragraph beginning on page twelve (12), line three (3) of the specification with the following rewritten paragraph:

By way of example and with reference now to FIG. 5, consider one multiswitch that provides for standard satellite functionality having six feed connections **46** and a cable T.V. connection **48** as earlier described with reference to FIG. 2, as well as providing the cascading **50** from one multiswitch to another multiswitch. The cascading eliminates the need to split the satellite signals at the antenna using additional electronics and opening oneself to potential signal loss problems. As earlier described, the triplexer **28** provides a filter for separating the satellite portion of the band from the 950 to 1450 MHz to the receiver satellite input from the coax **18** and also splits out the cable T.V. portion of the band, which when including the upstream, goes from 5 MHz to 860 MHz. The other portion of the band is coupled through two resistors and passes the telephony from 300 Hz to 3400 Hz, and the controller signal of approximately 57 kilohertz out.

Please replace the paragraph beginning on page twelve (12), line fifteen (15) of the specification with the following rewritten paragraph:

Consider detail with respect to the telephony portion of the system with reference again to FIGS. 5 and 4A in which a telephony interface to the "outside world" is through the RJ-11 connectors. One RJ-11 connector **88** on the triplexer **28** is connected to the SLIC device **52** that provides an interface for generating a ringing signal and connects directly

to a satellite receiver **20**. The second RJ-11 connector **90** connects to the DAA device **54** that detects a ring signal and is optionally connected to the outside telephone line **54** to the central office. The SLIC device **52** generally has three control lines **92** that control the state of operation and a detect line **94**. The control lines **92** are generally referred to as C1, C2, and C3. The detect line **94** is used when the satellite receiver essentially picks up the line to make a telephone call, at which point the signal on the detect line of the SCIC goes low. The three control lines **92** on the SLIC device **52** can place the SLIC device in ringing mode, active mode, on hook transmission (OHT) mode, for passing the CID information, and standby mode. With continued reference to FIG. 5, the DAA device **36** has three control lines **96** to take the DAA off-hook, to allow the DAA to pass caller ID information, and for the ring detect. Both the DAA and the SLIC devices have audio in **98** and audio out **99** lines.

Please replace the paragraph beginning on page thirteen (13), line one (1) of the specification with the following rewritten paragraph:

As above described, the system **10** of the present invention, described by the embodiments herein presented by way of example, permits a merging of all three desired signals, including the satellite signal, the off-air antenna or cable television, and the telephony signal. Further, these signals can be distributed to multiple locations so that the satellite receivers **20** can work independently of one another. As a result, an installer can simply connect a satellite signal, an off-air antenna, and a telephone signal, all at one easy

location in a single multiswitch **26**. Bt way of further example, and with reference to FIGS. 2 and 3, the installer also has the option of connecting the telephony signal at the triplexer The system of the present invention permits a merging of all three desired signals, including a satellite signal, off-air antenna or cable television, and a telephone signal. Further, these signals can be distributed to multiple locations so that the satellite receivers can work independently of one another. As a result, an installer can simply connect a satellite signal, an off-air antenna, and a telephone signal, all at one easy location in a single multiswitch device. The installer also has the option of connecting the telephone signal at the triplexer instead for providing distribution of dial tone to other triplexers and receivers through the multiswitch in situations where a telephone signal is not present at the multiswitch location. The installer connects the existing cabling to the outputs of the multiswitch device and delivers all three signals over one coax to each receiver location. This triplexer separates out the multiplexed signals so that the installer can connect them to their respective connections on the receiver. This is an easy solution for the installer or the homeowner. A single system that can merge all three signals and distribute them to any location in the home using the single existing cabling and each receiver can act independently of each other. There is a savings in time and the installer does not have multiple devices to connect **28h** instead for providing distribution of dial tone to other triplexers and receivers through the multiswitch **26** in situations where a telephone signal is not present at the multiswitch location. The installer connects the existing cabling to the outputs of the multiswitch **26** and delivers all three signals over the one coax **18** to each receiver location. The triplexer **28h** separates out the multiplexed signals so that the

installer can connect them to their respective connections on the receiver. This is an easy solution for the installer or the homeowner. A single system that can merge all three signals and distribute them to any location in the home using the single existing cabling and each receiver can act independently of each other.

Please replace the paragraph beginning on page fourteen (14), line twentyone (21) of the specification with the following rewritten paragraph:

With reference now to FIG. 6, a baseband communication system **100** includes the controllers **70**, **84** for controlling the telephony signal **22**. The baseband communication system **100** has bidirectional audio and bidirectional digital communication signals transmitted over the single conductor **19** that is the center conductor of the coax cable **18** that runs from the multiswitch **26** to the triplexer **28**. The audio signaling **102** is bidirectional in that it is going in both directions at the same time over the coax **18**. The digital signaling **104** has bidirectional capability but since in this device the master microcontroller /processor **70** in the multiswitch **26** poles the triplexers **28**, the digital communication ends up being a half duplex. Operation of the system **10** is controlled through this hybrid device **100**. The audio in signal **102** is biased up **103** on a DC level and then the digital in signal **104** is either set to a 0 or 5 volts. The digital signal either multiplies **105** the audio by a plus one or a minus one and then it is delivered to the center conductor **19** of the coax cable **18** after going through a 600 ohm resistor **106**, **107**. Part of the hybrid device **100** includes a substractor **108** that operates to subtract the local

outgoing signal so that only the received signal is detected at the output of the substractor. The substractor **108** operates with a comparator **110** to recover a returned digital signal **112** and includes an absolute value circuit **114** to recover a returned audio signal **116**.

Please replace the paragraph beginning on page fifteen (15), line nine (9) of the specification with the following rewritten paragraph:

One embodiment of the hybrid device **100** is further detailed with reference to FIGS. 7A and 7B as combined and herein after referred to as FIG.7 where a working implementation includes two hybrid devices **100**, **101**. One hybrid on each side of the coax cable **18** which allows simultaneous transmission of two audio signals bidirectional and two digital signals of bidirectional to be recovered at both ends without interference. The following describes one embodiment of the present invention including the hybrid operating as a voltage multiplexer, which allows analog, the telephony audio, and digital, the controlling signals, to be transmitted simultaneously over the single wire **19** and recovered at a far end. Traditional communication methods use either time domain multiplexing, or frequency domain multiplexing to enable multiple signals to share a single medium. The technique of the present invention herein described employs a voltage multiplexing in which two, or more, baseband signals, that occupy the same frequency spectrum, can be simultaneously transmitted and independently received.

Please replace the paragraph beginning on page fifteen (15), line twentytwo (22) of the specification with the following rewritten paragraph:

With reference again to the FIG. 7, Audio_1_IN and Digital_1_IN originate on the left side and are received on the right as Audio_1_OUT and Digital_1_OUT. Simultaneously Audio_2_IN and Digital_2_IN are being transmitted from the opposite direction and are being detected at Audio_2_OUT and Digital_2_OUT. The Audio_1_IN (Pt. A) is raised to a dc level (in this example) of +2.5 volts (Pt. B). The highs and lows of the Digital_1_IN waveform determined if the analog voltage is inverted at Pt. C. In this example, a high causes the offset analog voltage to remain non-inverted while a low causes the offset analog voltage to invert (Pt. C). The combined signal at Pt. C is received at the far end (Pt. K) without interference with the Audio_2_IN and Digital_2_IN signals that are coming from the far end. This simultaneous bidirectional communication is possible because the receiving amplifier at each end samples and subtracts out the signal from its own transmitter. Therefore at Pt. K, the only signal that exists is the signal present at Pt. C. Because the signal at Pt. K goes through a full wave rectification, the digital information is completely removed with only the analog (Audio_1_IN) remaining (Pt. M). A comparator also acts on the signal at Pt. K to remove the analog audio and recover the Digital_1_IN at Pt. L.

Please replace the paragraph beginning on page eighteen (18), line one (1) of the specification with the following rewritten paragraph:

An alternative embodiment to the hybrid device **100** of FIG. 6 is illustrated with reference to FIG. 8 and employs an encoding of both the audio and digital on the same center conductor of the coax cable. Square waves used by the microcontrollers to talk to each other are combined with digital pulses to encode the square wave into a 32 kilohertz carrier and summed that into the audio signal. As a further modification, instead of using the 600 Ohm resistor to couple the signal to the coax cable, a small audio transformer **118** is employed, as illustrated with reference to FIG. 8. The transformer **118** allows for a coupling of the audio and the digital signals, but also allows the uninhibited passing of the 18 volts and the 22 kilohertz that are needed for control signals for the multiswitch.

Remarks

The specification including the Brief Description of the Drawings and the Detailed Description of Preferred Embodiments has been amended to accommodate modifications made to the drawings as follows:

FIG. AS FILED	FIG. AS AMENDED
1	1
1A	1A
2	2A,2B,2C, and 2D
2A	3A, 3B and 3C
3A	4A
3B	4B
4	5
5	6
6	7A and 7B
7	8

No new matter has been added by this amendment.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**<u>Version With Markings to Show Changes Made</u>**."

If further prosecution of this application can be facilitated through a telephone conference between the Examiner and the undersigned, the Examiner is requested to telephone the undersigned at the Examiner's convenience.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, D.C. 20231, on this 10TH day of July, 2002.

Edward Bradley

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Please replace the paragraph beginning on page eight (8), line nine (9) of the specification with the following rewritten paragraph:

[FIG. 2] FIGS. 2A, 2B, 2C, and 2D combine to provide is a block diagram illustrating an alternate embodiment of the multiswitch and triplexer of the present invention;

[FIG. 2A is] FIGS. 3A, 3B, and 3C combine to provide a block diagram of an alternate embodiment of the system of [FIG. 2] FIGS. 2A, 2B, 2C, and 2D in keeping with the teachings of the present invention;

FIGS. [3A and 3B] 4A and 4B are schematic block diagrams illustrating alternate embodiment of a triplexer of the present invention;

FIGS. [4] 5 is a partial block diagram illustrating operating elements of the embodiments of FIGS. [2 and 2A] 2A-3C;

FIG. [5] 6 is a partial functional flow diagram illustrating a baseband communications system including a microcontroller operable with the multiswitch and triplexer of FIGS. [2 and 2A] 2A-3C;

[FIG. 6 is] FIGS. 7A and 7B combine to provide a schematic block diagram illustrating one implementation of the system of FIG. [5] 6; and

FIG. [7] 8 is a functional flow diagram illustrating an alternate embodiment of a controller of FIG. [5] 6.

Please replace the paragraph beginning on page ten (10), line one (1) of the specification with the following rewritten paragraph:

With reference now to FIGS. 2A,2B,2C, and 2D as combined and referred to herein after as FIG. 2, one preferred embodiment of the system **10** includes input ports **42** providing six satellite port connections **46** and a cable T.V. port feed connection **48**

which as herein provided by way of example are routed through output ports **44** to as many as eight receivers **20**. Cascaded antenna outputs **50** are provided after initial antenna signal processing within the multiswitch **26** for providing a feed to other multiswitch antenna ports thus allowing a cascading of the antenna ports to feed multiple receivers. As earlier described with reference to FIGS. 1 and 2, the multiswitch **26** interfaces to the triplexer **28**. Alternate triplexer embodiments will include a "high end" triplexer **28h** or a "low end" triplexer **28l** as illustrated with reference to the system of [FIG. 2B] FIGS. 3A, 3B, and 3C combined and herein after referred to as FIG. 3 and to the triplexer diagrams of FIGS. [3A] 4A and [3B] 4B. The "high end" triplexer **28h**, so named for its added features over a "low end" triplexer **29l**, has a SLIC interface device **52** and a DAA interface device **54**. The SLIC **52** is a subscriber line interface that allows connection to the receiver **20** and the DAA interface **54** allows connection to an outside wall line connection **54**. The function of DAA device **36** is to detect a ring or connection signal to the outside ring connection and the SLIC device **52** is used to regenerate the ring and connect to the receiver **20** for providing connectivity through the multiswitch **26**.

Please replace the paragraph beginning on page ten (10), line eighteen (18) of the specification with the following rewritten paragraph:

The block diagram of FIG. [2A] 3 illustrates, by way of example, a low end system **10l** having the multiswitch using either a low **28l** or high **28h** end triplexer **28**. Low end and high end as herein described refer to the cost of the equipment and allow for optional uses as desired by the installer or customer. By way of example, for the low end system **10l** of FIG. [2a] 3, four satellite inputs ports **42** are provided as well as an antenna cable connection **48**. The cascading outputs **50** may or may not be included depending on the intended use of the system **10l**. The system **10** optionally includes cable TV upstream components **56** to allow a cable modem **58** in place of a receiver **58** and triplexer **28** to provide cable modem access from the cable connection

48 through the multiswitch **26**. By way of further example and with reference again to FIG. [2A] 3, the low end embodiment of the system **10l** as herein described has only a downstream connection **60** for providing cable TV or off air antenna programming coupled with the satellite input feeds.

Please replace the paragraph beginning on page eleven (11), line one (1) of the specification with the following rewritten paragraph:

With continued reference to FIGS. 2 and [2A] 3, the block diagram signal input flow starts at the top portion where either a vertical **42v** or a horizontal **42h** polarization is provided by the satellite signal antenna **14**. The system provides 13 volt and 18 volt biasing **62**, respectively. The 13 volt signal is referred to as vertical or as having right hand polarization, and the 18 volt signal as horizontal or as having a left hand polarization. These biases are fixed onto each of the respective ports. Signal gain and filtering **64** provide a desired 950 to 1450 MHz signal passage from the satellite antenna ports **46**. Distributed couplers **66** provide uniform feeds to each of the single pole multi-throw switches **68** which will connect to each antenna port and satellite antenna port and allow a master microcontroller **70** to select the needed programming feed for routing to a particular receiver **20**. The switches **68** are controlled by the master microcontroller **70** described in further detail later in this section. In the embodiment herein described, the microcontroller **70** is carried within the multiswitch housing, as illustrated with reference to FIG. [4] 5, but it is to be understood that the microcontroller may be external without departing from the teachings of the present invention. Returning to FIGS. 2 and [2A] 3, after the switch **68**, fixed gain and RF slope equalization components **72** compensate for higher frequency attenuation due to cable losses. After the slope equalizer, a coupler **74** is provided for coupling the cable T.V. line **76** with the satellite feed **78** so that a single feed, the single coax **18** to each triplexer, can be used for connecting to the appropriate receiver **20**. Variable gain **80** is provided at the output for adjusting the signal level for the satellite as well as terrestrial

signals. The telephony signal is diplexed **82** with the RF signal for transmission over the common and single coax **18** to the triplexer **28**. Once the signal leaves the multiswitch **26**, it is carried by the coax to the triplexer **28**.

Please replace the paragraph beginning on page eleven (11), line twentyfive (25) of the specification with the following rewritten paragraph:

As illustrated with reference again to FIGS. 2 and [2A] <u>3</u>, the triplexer **28** functions to split the satellite portion of the frequency band and the cable portion of the frequency band as well as the telephony portion of the band that is being transported across the coaxial cable **18**. As illustrated with reference again to FIGS. [3A] <u>4A</u> and [3B] <u>4B</u>, within the telephony portion of the triplexer **28** is a microcontroller **84** that provides a control signal used between the triplexer and the master microcontroller **70** of the multiswitch **26** to control the RF and telephony switching between a triplexer and a multiswitch and a triplexer multiswitch triplexer path.

Please replace the paragraph beginning on page twelve (12), line three (3) of the specification with the following rewritten paragraph:

By way of example and with reference now to FIG. [4] <u>5</u>, consider one multiswitch that provides for standard satellite functionality having six feed connections **46** and a cable T.V. connection **48** as earlier described with reference to FIG. 2, as well as providing the cascading **50** from one multiswitch to another multiswitch. The cascading eliminates the need to split the satellite signals at the antenna using additional electronics and opening oneself to potential signal loss problems. As earlier described, the triplexer **28** provides a filter for separating the satellite portion of the band from the 950 to 1450 MHz to the receiver satellite input from the coax **18** and also splits out the cable T.V. portion of the band, which when including the upstream, goes from 5 MHz to 860 MHz. The other portion of the band is coupled through two resistors

and passes the telephony from 300 Hz to 3400 Hz, and the controller signal of approximately 57 kilohertz out.

Please replace the paragraph beginning on page twelve (12), line fifteen (15) of the specification with the following rewritten paragraph:

Consider detail with respect to the telephony portion of the system with reference again to FIGS.[4] 5 and [3A] 4A in which a telephony interface to the "outside world" is through the RJ-11 connectors. One RJ-11 connector **88** on the triplexer **28** is connected to the SLIC device **52** that provides an interface for generating a ringing signal and connects directly to a satellite receiver **20**. The second RJ-11 connector **90** connects to the DAA device **54** that detects a ring signal and is optionally connected to the outside telephone line **54** to the central office. The SLIC device **52** generally has three control lines **92** that control the state of operation and a detect line **94**. The control lines **92** are generally referred to as C1, C2, and C3. The detect line **94** is used when the satellite receiver essentially picks up the line to make a telephone call, at which point the signal on the detect line of the SCIC goes low. The three control lines **92** on the SLIC device **52** can place the SLIC device in ringing mode, active mode, on hook transmission (OHT) mode, for passing the CID information, and standby mode. With continued reference to FIG. [4] 5, the DAA device **36** has three control lines **96** to take the DAA off-hook, to allow the DAA to pass caller ID information, and for the ring detect. Both the DAA and the SLIC devices have audio in **98** and audio out **99** lines.

Please replace the paragraph beginning on page thirteen (13), line one (1) of the specification with the following rewritten paragraph:

As above described, the system **10** of the present invention, described by the embodiments herein presented by way of example, permits a merging of all three desired signals, including the satellite signal, the off-air antenna or cable television, and the telephony signal. Further, these signals can be distributed to multiple locations so

that the satellite receivers **20** can work independently of one another. As a result, an installer can simply connect a satellite signal, an off-air antenna, and a telephone signal, all at one easy location in a single multiswitch **26**. Bt way of further example, and with reference to FIGS. 2 and [2A] 3, the installer also has the option of connecting the telephony signal at the triplexer The system of the present invention permits a merging of all three desired signals, including a satellite signal, off-air antenna or cable television, and a telephone signal. Further, these signals can be distributed to multiple locations so that the satellite receivers can work independently of one another. As a result, an installer can simply connect a satellite signal, an off-air antenna, and a telephone signal, all at one easy location in a single multiswitch device. The installer also has the option of connecting the telephone signal at the triplexer instead for providing distribution of dial tone to other triplexers and receivers through the multiswitch in situations where a telephone signal is not present at the multiswitch location. The installer connects the existing cabling to the outputs of the multiswitch device and delivers all three signals over one coax to each receiver location. This triplexer separates out the multiplexed signals so that the installer can connect them to their respective connections on the receiver. This is an easy solution for the installer or the homeowner. A single system that can merge all three signals and distribute them to any location in the home using the single existing cabling and each receiver can act independently of each other. There is a savings in time and the installer does not have multiple devices to connect **28h** instead for providing distribution of dial tone to other triplexers and receivers through the multiswitch **26** in situations where a telephone signal is not present at the multiswitch location. The installer connects the existing cabling to the outputs of the multiswitch **26** and delivers all three signals over the one coax **18** to each receiver location. The triplexer **28h** separates out the multiplexed signals so that the installer can connect them to their respective connections on the receiver. This is an easy solution for the installer or the homeowner. A single system that can merge all three signals and distribute them to any location in the home using the single existing cabling and each receiver can act independently of each other.

Please replace the paragraph beginning on page fourteen (14), line twentyone (21) of the specification with the following rewritten paragraph:

With reference now to FIG. [5] 6, a baseband communication system **100** includes the controllers **70, 84** for controlling the telephony signal **22**. The baseband communication system **100** has bidirectional audio and bidirectional digital communication signals transmitted over the single conductor **19** that is the center conductor of the coax cable **18** that runs from the multiswitch **26** to the triplexer **28**. The audio signaling **102** is bidirectional in that it is going in both directions at the same time over the coax **18**. The digital signaling **104** has bidirectional capability but since in this device the master microcontroller /processor **70** in the multiswitch **26** poles the triplexers **28**, the digital communication ends up being a half duplex. Operation of the system **10** is controlled through this hybrid device **100**. The audio in signal **102** is biased up **103** on a DC level and then the digital in signal **104** is either set to a 0 or 5 volts. The digital signal either multiplies **105** the audio by a plus one or a minus one and then it is delivered to the center conductor **19** of the coax cable **18** after going through a 600 ohm resistor **106, 107**. Part of the hybrid device **100** includes a substractor **108** that operates to subtract the local outgoing signal so that only the received signal is detected at the output of the substractor. The substractor **108** operates with a comparator **110** to recover a returned digital signal **112** and includes an absolute value circuit **114** to recover a returned audio signal **116**.

Please replace the paragraph beginning on page fourteen (15), line nine (9) of the specification with the following rewritten paragraph:

One embodiment of the hybrid device **100** is further detailed with reference to FIG. [6] FIGS. 7A and 7B as combined and herein after referred to as FIG.7 where a working implementation includes two hybrid devices **100, 101**. One hybrid on each side of the coax cable **18** which allows simultaneous transmission of two

audio signals bidirectional and two digital signals of bidirectional to be recovered at both ends without interference. The following describes one embodiment of the present invention including the hybrid operating as a voltage multiplexer, which allows analog, the telephony audio, and digital, the controlling signals, to be transmitted simultaneously over the single wire **19** and recovered at a far end. Traditional communication methods use either time domain multiplexing, or frequency domain multiplexing to enable multiple signals to share a single medium. The technique of the present invention herein described employs a voltage multiplexing in which two, or more, baseband signals, that occupy the same frequency spectrum, can be simultaneously transmitted and independently received.

Please replace the paragraph beginning on page fourteen (15), line twentytwo (22) of the specification with the following rewritten paragraph:

With reference again to the FIG. [6] 7, Audio_1_IN and Digital_1_IN originate on the left side and are received on the right as Audio_1_OUT and Digital_1_OUT. Simultaneously Audio_2_IN and Digital_2_IN are being transmitted from the opposite direction and are being detected at Audio_2_OUT and Digital_2_OUT. The Audio_1_IN (Pt. A) is raised to a dc level (in this example) of +2.5 volts (Pt. B). The highs and lows of the Digital_1_IN waveform determined if the analog voltage is inverted at Pt. C. In this example, a high causes the offset analog voltage to remain non-inverted while a low causes the offset analog voltage to invert (Pt. C). The combined signal at Pt. C is received at the far end (Pt. K) without interference with the Audio_2_IN and Digital_2_IN signals that are coming from the far end. This simultaneous bidirectional communication is possible because the receiving amplifier at each end samples and subtracts out the signal from its own transmitter. Therefore at Pt. K, the only signal that exists is the signal present at Pt. C. Because the signal at Pt. K goes through a full wave rectification, the digital information is completely removed with only the analog (Audio_1_IN) remaining (Pt. M). A comparator also acts on the signal at Pt. K to remove the analog audio and recover the Digital_1_IN at Pt. L.

Please replace the paragraph beginning on page eighteen (18), line one (1) of the specification with the following rewritten paragraph:

An alternative embodiment to the hybrid device **100** of FIG. [5] 6 is illustrated with reference to FIG. [7] 8 and employs an encoding of both the audio and digital on the same center conductor of the coax cable. Square waves used by the microcontrollers to talk to each other are combined with digital pulses to encode the square wave into a 32 kilohertz carrier and summed that into the audio signal. As a further modification, instead of using the 600 Ohm resistor to couple the signal to the coax cable, a small audio transformer **118** is employed, as illustrated with reference to FIG. [7A] 8. The transformer **118** allows for a coupling of the audio and the digital signals, but also allows the uninhibited passing of the 18 volts and the 22 kilohertz that are needed for control signals for the multiswitch.